STATISTICS, DATA ANALYSIS, AND PROBABILITY

The following seven California mathematics academic content standards from the Statistics, Data Analysis, and Probability strand are assessed on the CAHSEE by 12 test questions and are represented in this booklet by 23 released test questions. These questions represent only a few of the ways in which these standards may be assessed on the CAHSEE.

GRADE 6 — STATISTICS, DATA ANALYSIS, AND PROBABILITY	
Standard Set 1.0	**Students compute and analyze statistical measurements for data sets:**
1.1	Compute the ~~range~~, mean, median, and mode of data sets.*
Standard Set 2.0	**Students use data samples of a population and describe the characteristics and limitations of the samples:**
2.5	Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims.
Standard Set 3.0	**Students determine theoretical and experimental probabilities and use these to make predictions about events:**
3.1	Represent all possible outcomes for compound events in an organized way (e.g., tables, grids, tree diagrams) and express the theoretical probability of each outcome.
3.3	Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if *P* is the probability of an event, 1 - *P* is the probability of an event not occurring.
3.5	Understand the difference between independent and dependent events.
GRADE 7 — STATISTICS, DATA ANALYSIS, AND PROBABILITY	
Standard Set 1.0	**Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:**
1.1	Know various forms of display for data sets, ~~including a stem-and-leaf plot or box-and- whisker plot;~~ use the forms to display a single set of data or to compare two sets of data.*
1.2	Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).

* The crossed-out portion of this standard is not assessed on the CAHSEE, but is still included in grade-level standards.

30. Donald priced six personal Compact Disc (CD) players. The prices are shown below.

$21.00, $23.00, $21.00, $39.00, $25.00, $31.00

What is the median price?

A $21.00

B $24.00

C $27.00

D $30.00

M02964

31. Rico's first three test scores in biology were 65, 90, and 73. What was his mean score?

A 65

B 73

C 76

D 90

M02247

32. The chart below shows the mathematics test scores of three students.

Mathematics Test Scores

	Test 1	Test 2	Test 3	Test 4
Parisa	7	8	10	6
Hector	6	7	9	10
Charles	8	10	10	9

What is Hector's mean score?

A 6

B 7

C 8

D 9

M00124

33. The box below shows the number of kilowatt-hours of electricity used last month at each of the houses on Harris Street.

620, 570, 570, 590, 560, 640, 590, 590, 580

What is the mode of these data?

A 560

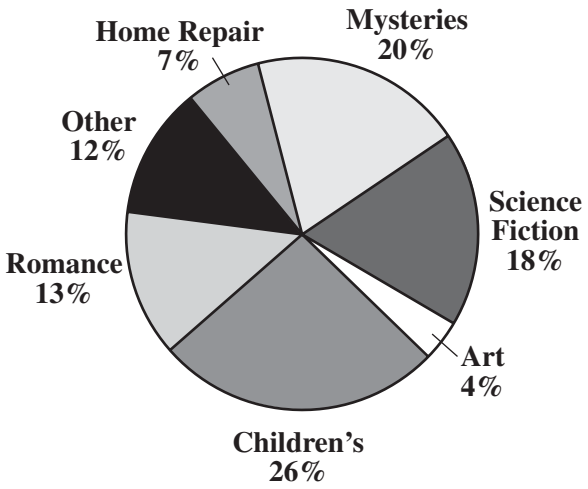
B 580

C 590

D 640

M12248

34. The Smithburg town library wanted to see what types of books were borrowed most often.



According to the circle graph shown above—

A more Children's books were borrowed than Romance and Science Fiction combined.

B more than half of the books borrowed were Children's, Mysteries, and Art combined.

C more Mysteries were borrowed than Art and Science Fiction combined.

D more than half of the books borrowed were Romance, Mysteries, and Science Fiction combined.

M02131

35. Three-fourths of the 36 members of a club attended a meeting. Ten of those attending the meeting were female. Which one of the following questions can be answered with the information given?

A How many males are in the club?

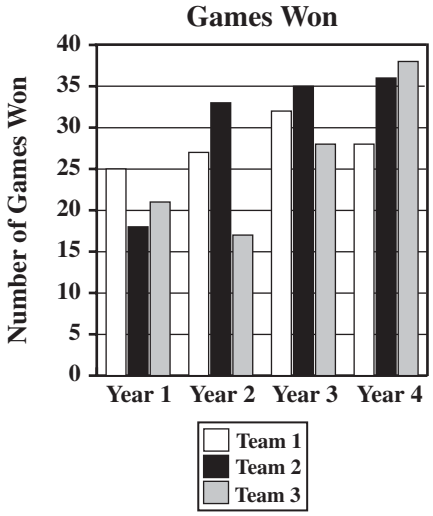
B How many females are in the club?

C How many male members of the club attended the meeting?

D How many female members of the club did not attend the meeting?

M00261

36. The number of games won over four years for three teams is shown on the graph below.



Which statement is true based on this information?

A Team 3 always came in second.

B Team 1 had the best average overall.

C Team 1 always won more games than Team 3.

D Team 2 won more games each year than in the previous year.

M10300

37. To get home from work, Curtis must get on one of the three highways that leave the city. He then has a choice of four different roads that lead to his house. In the diagram below, each letter represents a highway, and each number represents a road.

Road \ Highway	A	B	C
1	A 1	B 1	C 1
2	A 2	B 2	C 2
3	A 3	B 3	C 3
4	A 4	B 4	C 4

If Curtis randomly chooses a route to travel home, what is the probability that he will travel Highway B and Road 4?

A $\frac{1}{16}$

B $\frac{1}{12}$

C $\frac{1}{4}$

D $\frac{1}{3}$

M02512

38. The table below shows all of the possible outcomes when flipping three fair coins at the same time.

First Coin	Second Coin	Third Coin
H	H	H
H	H	T
H	T	H
H	T	T
T	H	H
T	H	T
T	T	H
T	T	T

Which of the following statements must be true?

A The probability that exactly two coins have the same outcome is $\frac{1}{2}$.

B The probability of getting exactly one tail is higher than getting exactly two tails.

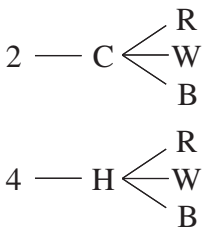
C The probability of getting at least one head is higher than the probability of getting at least one tail.

D The probability that all of the coins will land on heads is the same as the probability that all of the coins will land on tails.

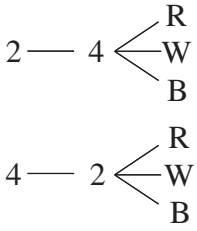
M13243

39. Carmen wants to buy a new car. Her choices are a 2-door or a 4-door, a convertible top or a hard top, and red, white, or black. Which of the following tree diagrams represents all the possible choices for the car?

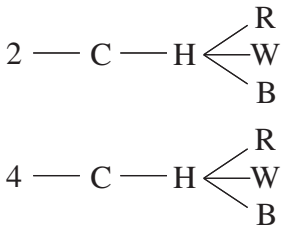
A



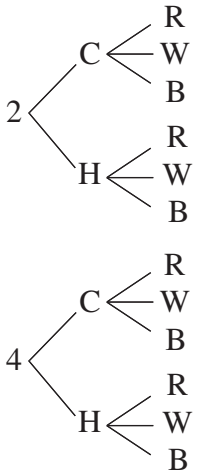
B



C



D



M00406

40. A bucket contains 3 bottles of apple juice, 2 bottles of orange juice, 6 bottles of tomato juice, and 8 bottles of water. If Kira randomly selects a bottle, what is the probability that she will select a drink other than water?

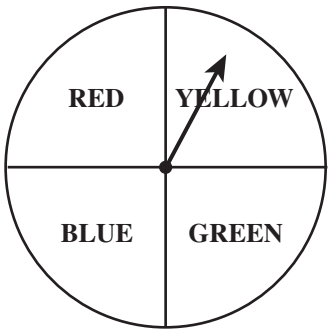
A $\frac{3}{4}$

B $\frac{11}{19}$

C $\frac{8}{19}$

D $\frac{1}{4}$

M11379



41. The spinner shown above is fair. What is the probability that the spinner will <u>not</u> stop on red if you spin it one time?

A $\frac{1}{4}$

B $\frac{1}{3}$

C $\frac{3}{4}$

D $\frac{4}{3}$

M00094

42. Fran has 16 CDs in a box: 6 country, 6 rock, 2 dance, and 2 classical. If she takes out one CD without looking, what is the probability that she will pick a rock or country CD?

A 25%

B 50%

C 75%

D 100%

M12305

43. Mr. Gulati is holding five cards numbered 1 through 5. He has asked five students to each randomly pick a card to see who goes first in a game. Whoever picks the card numbered 5 goes first. Juanita picks first, gets the card numbered 4, and keeps the card. What is the probability that Yoko will get the card numbered 5 if she picks second?

A $\frac{1}{2}$

B $\frac{1}{3}$

C $\frac{1}{4}$

D $\frac{1}{5}$

M02145

44. A bag contained four green balls, three red balls, and two purple balls. Jason removed one purple ball from the bag and did <u>not</u> put the ball back in the bag. He then randomly removed another ball from the bag. What is the probability that the second ball Jason removed was purple?

A $\frac{1}{36}$

B $\frac{1}{9}$

C $\frac{1}{8}$

D $\frac{2}{9}$

M03097

45. Heather flipped a coin five times, and each time it came up heads. If Heather flips the coin one more time, what is the theoretical probability that it will come up tails?

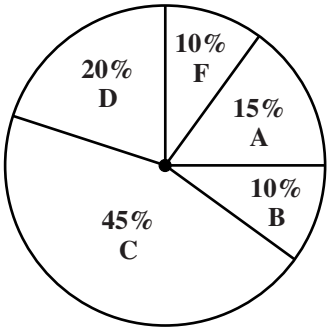
A $\frac{1}{6}$

B $\frac{1}{2}$

C $\frac{3}{5}$

D $\frac{5}{6}$

M02171



46. The circle graph shown above represents the distribution of the grades of 40 students in a certain geometry class. How many students received As or Bs?

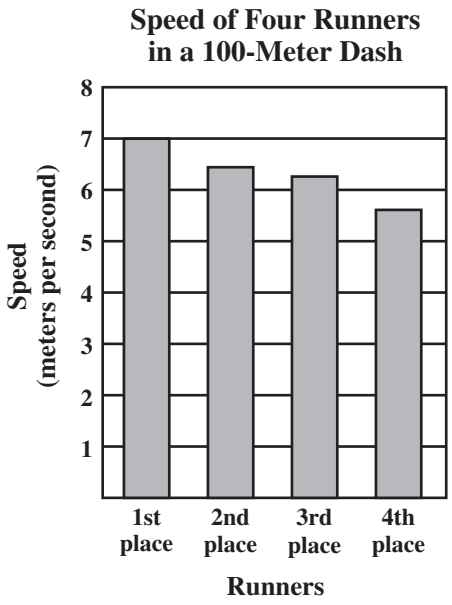
A 6

B 10

C 15

D 20

M00300



47. Based on the bar graph shown above, which of the following conclusions is true?

A Everyone ran faster than 6 meters per second.

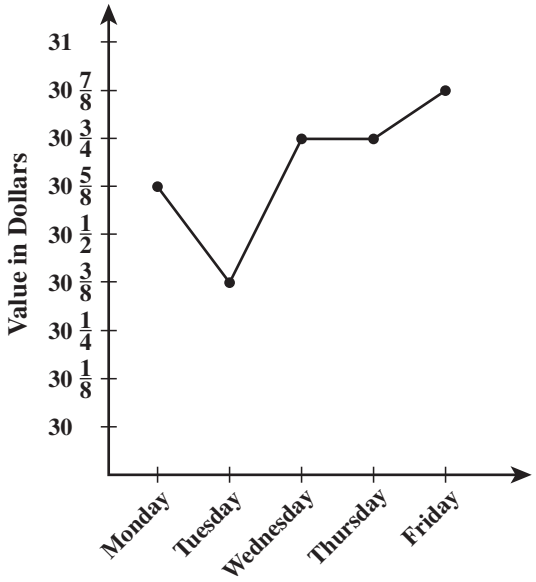
B The best possible rate for the 100-meter dash is 5 meters per second.

C The first-place runner was four times as fast as the fourth-place runner.

D The second-place and third-place runners were closest in time to one another.

M00279

48. The graph below represents the closing price of a share of a certain stock for each day of a week.



Which day had the greatest increase in the value of this stock over that of the previous day?

A Tuesday

B Wednesday

C Thursday

D Friday

M00295

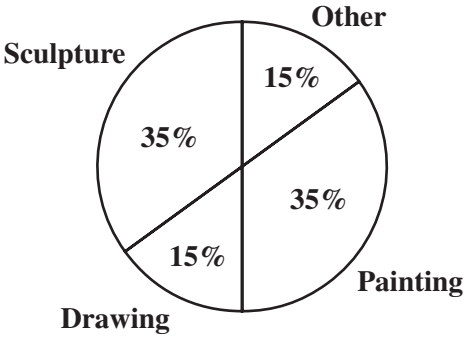
49. The students at a high school were asked to name their favorite type of art. The table below shows the results of the survey.

Art Survey

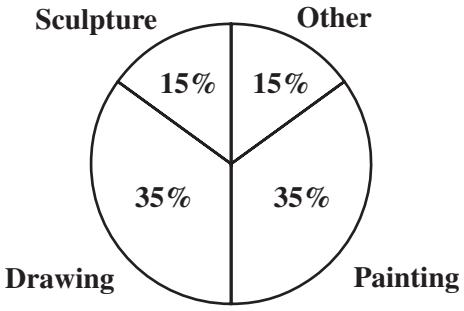
Type of Art	Number of Students
Painting	714
Drawing	709
Sculpture	296
Other	305

Which circle graph BEST shows these data?

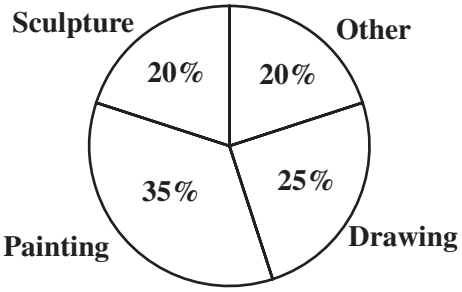
A



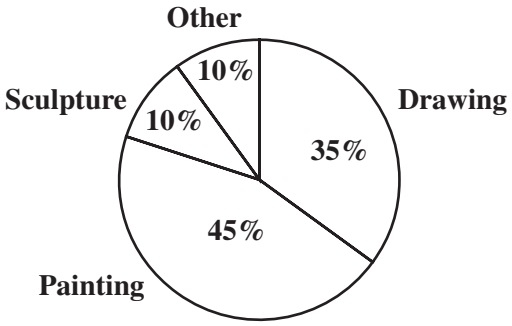
B



C



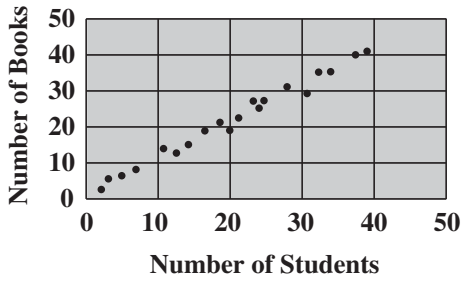
D



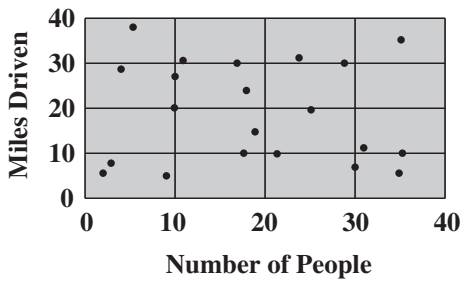
M13053

50. Which scatterplot shows a negative correlation?

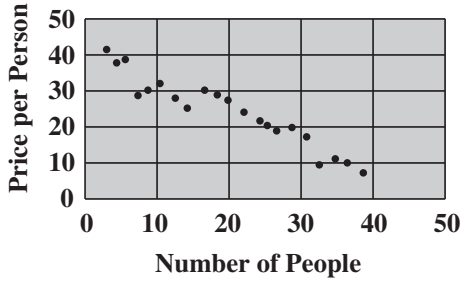
A



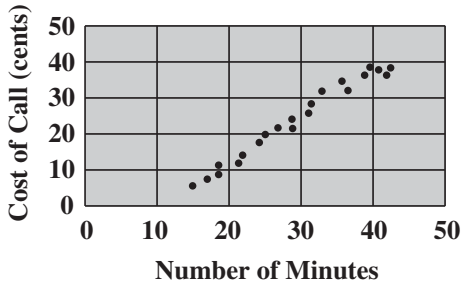
C



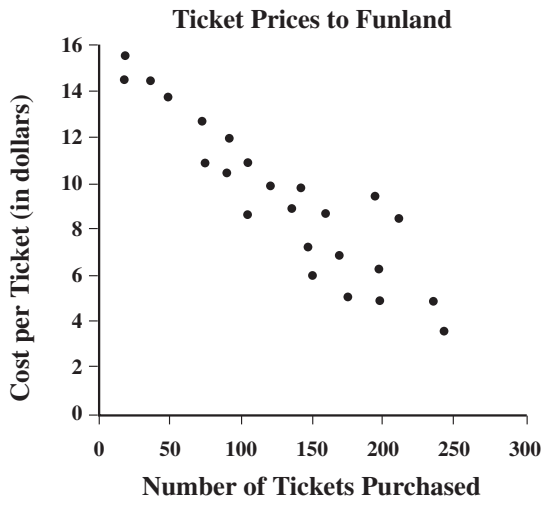
B



D



M02546



51. The cost of a ticket to Funland varies according to the season. Which of the following conclusions about the number of tickets purchased and the cost per ticket is best supported by the scatterplot above?

A The cost per ticket increases as the number of tickets purchased increases.

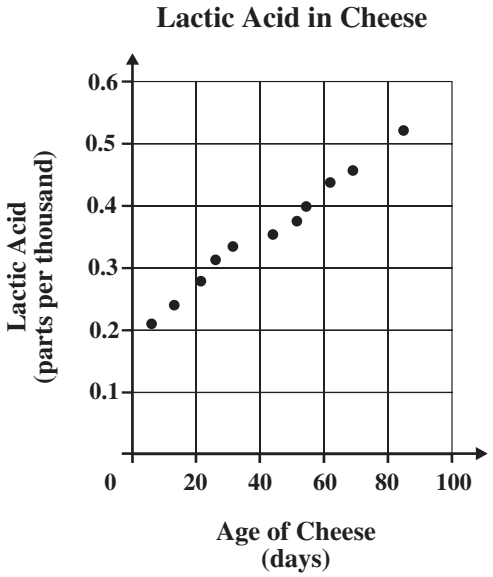
B The cost per ticket is unchanged as the number of tickets purchased increases.

C The cost per ticket decreases as the number of tickets purchased increases.

D There is no relationship between the cost per ticket and the number of tickets purchased.

M02208

52. The scatterplot below shows the time cheese has been aging and the amount of lactic acid present in the cheese.



Which statement is MOST strongly supported by the scatterplot?

A The longer cheese ages, the more lactic acid is present.

B The longer cheese ages, the less lactic acid is present.

C The amount of lactic acid present remains constant as cheese ages.

D No relationship exists between the time cheese ages and the amount of lactic acid present.

M22077

Question Number	Correct Answer	Standard	School Year of Exam
30	B	6PS1.1	2002-2003
31	C	6PS1.1	2001-2002
32	C	6PS1.1	2000-2001
33	C	6PS1.1	2003-2004
34	D	6PS2.5	2002-2003
35	C	6PS2.5	2001-2002
36	D	6PS2.5	2003-2004
37	B	6PS3.1	2001-2002
38	D	6PS3.1	2003-2004
39	D	6PS3.1	2004-2005
40	B	6PS3.3	2002-2003
41	C	6PS3.3	2000-2001
42	C	6PS3.3	2004-2005
43	C	6PS3.5	2001-2002
44	C	6PS3.5	2001-2002
45	B	6PS3.5	2000-2001
46	B	7PS1.1	2002-2003
47	D	7PS1.1	2001-2002
48	B	7PS1.1	2000-2001
49	B	7PS1.1	2004-2005
50	B	7PS1.2	2001-2002
51	C	7PS1.2	2000-2001
52	A	7PS1.2	2003-2004